

## **Dispersion of defect modes in silicon photonic crystal waveguides measured by attenuated total reflectance**

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The dispersion of defect modes in linear photonic crystal (PhC) waveguides defined on Silicon membranes is measured all over the guided mode region of the Brillouin zone by means of angle- and polarization- resolved attenuated total reflectance (ATR). The use of a silicon prism for ATR (unlike in previous measurements on SOI systems with a ZnSe prism: M. Galli et al., Phys. Rev B 70, 081307R, 2004) greatly enhances the coupling to guided photonic modes with high group velocity. The presence of a single-mode window in the guided region is demonstrated for standard W1.0 waveguides (a missing row of holes in the  $\Gamma K$  direction of the triangular lattice) as well as for W1.5 waveguides with increased channel width. This finding may be important for the realization of linear PhC waveguides with ultra-low losses. The experimental results are successfully compared with full 3D calculations of the photonic mode dispersion as well as of ATR spectra.